



ABC Technical Bulletin

Manufactured Stone Veneer

Manufactured stone, cultured stone, stone veneer, regardless of what it is called it can be the nemesis of a home. The proper application of manufactured stone is more exacting than stucco or masonry. In an article written for The Journal of Light Construction, titled "Manufactured Stone Nightmares," Dennis McCoy discusses some of the problems and effects that have been encountered in his repair and remediation work in Utah, Texas, Colorado and California.

The problems that Mr. McCoy discusses can often be in structures less than two years old. The problems include rotten sheathing and framing members of the exterior walls. All troubles found with manufactured stone are not the result of the stone itself but by the application of other materials and systems of the structure. If flashing is not properly installed at the junctions of roofs and walls, water can enter the wall system. Other areas are around windows and doors that may be improperly flashed, using only one layer of paper behind the stone and improper transitions between the stone and other materials.

The 2003 building code is nearly barren of mention of manufactured stone and what is said is confusing. It could be interpreted as being in the same category as brick veneer, (IRC 2003 R703.7 Stone and Masonry Veneer). It will fall in the guidelines of Exterior Wall Coverings. The International Code Council's (ICC) web site (iccsafe.org) provides additional guidance in the proper method to install manufactured stone. The Acceptance Criteria for Precast Stone Veneer, AC-514, lists the requirements for manufactured stone veneer before an ICC Evaluation Services Report will be issued. At this time, there are seven precast stone manufacturers that have passed the criteria of AC-51 as it was originally approved in June 1988.

Section 1403.2 of the 2003 IBC states that the exterior wall shall provide the building with a weather-resistant exterior wall. Section 2512.1.2 discusses the use of weep screeds at the lower termination point and also covers the distances from both grade and paved areas. A discussion of Section 1403.2 brings up several points. First is the creation of a weather resistant exterior wall using various flashings and weather-resistant sheathing paper. In reality this should be a simple process of ensuring that the material is properly shingled and that the flashing drains to the required points. However, what may seem simple becomes complex because of the materials involved. Perhaps of more importance is to look at just what manufactured stone is and how in reality it is installed on the structure.

Most people think of manufactured stone as a masonry material getting the same type of weather protection behind it as would a brick veneer. This would be a single layer of paper properly lapped. The issue with this is that brick veneer has airspace between the veneer and the weather protection paper. Unlike brick, manufactured stone is stuck directly to the substrate wall in the same manner as a stucco system. Like stucco, manufactured stone becomes saturated with moisture and holds this moisture against the wall.

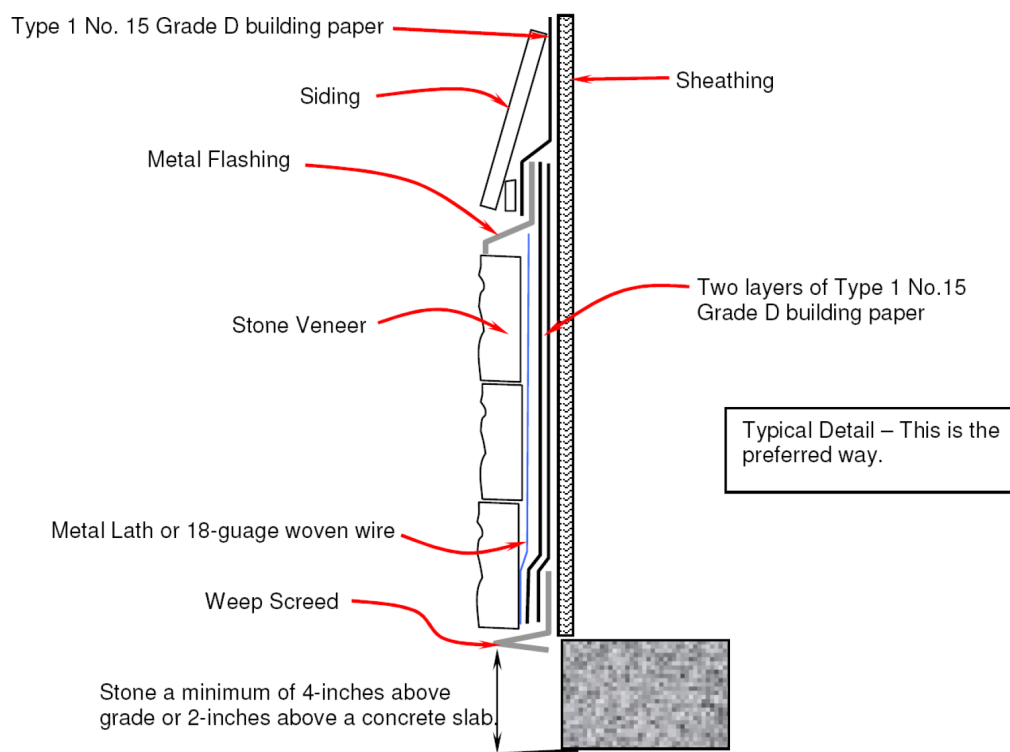
The substrate wall has to defend against the moisture load of the stone since there is no drainage or drying space. The substrate covering under stucco should be two layers of paper, the same as stucco. In fact it could be argued that manufactured stone should be detailed even tougher than stucco. Because of its thickness, it can hold a larger moisture load. It would appear that manufactured stone should be treated in the same way for installation as is stucco. This would include: the required two layers of moisture barrier properly lapped; flashing of all penetrations,

ABCO Technical Bulletin

intersections between walls and roofs and joints of manufactured stone and dissimilar materials. (This would address IBC 1403.2.)

Having the additional paper on the wall does not guarantee the moisture load of manufactured stone would not negatively affect the integrity of the wall. It is critical that proper drainage systems weep or drain the moisture that is trapped behind the veneer of manufactured stone. The 2003 IBC in section 2512.1.2 requires that weep screeds be installed at the bottom of the wall to allow the gravitational drainage of the wall assembly to occur. It also states the distances that the weep screed is to be above grade and hard surfaces. In conclusion, it would appear that manufactured stone could be considered a hybrid exterior wall covering. It is really not stucco nor masonry veneer.

The code does not specify the exact method for installation. However, the acceptance criteria for manufactured stone do comment on the installation. With this information it appears that manufactured stone should be installed the same as stucco with multiple layers of paper and weep screed at the bottom.



ABCO Construction Services Corporation has developed this information for its clients and friends. The information may contain citations of applicable codes, manufacturer's recommendations and best practices from noted sources.

It is ABCO's desire to present the topic in an unbiased manner, using generally accepted references, to allow those confronted with the topic to make an informed decision. If you have any questions or comments please feel free to contact ABCO.

For ease of review the White Paper may be broken into various sections. The first section will contain the overview and summary of the topic. The second section will consist of various definitions and references to applicable sources. The third section will contain the complete references. It is hoped this report design will allow the recipient to gain the level of knowledge in the least amount of time.